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TIMBER MANAGEMENT PLAN

PAYSON WORKING CIRCLE

TONTO NATIONAL FOREST

Region 3

FOURTH REVISION

F.Y. 1962 through F.Y. 1971

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TIMBER MANAGEMENT PLAN

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TONTO NATIONAL FOREST
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Fourth Revision

F.Y. 1962 Through F.Y. 1971

Approved: July 19, 1963

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FOURTH REVISION

TIMBER MANAGEMENT PLAN

PAYSON WORKING CIRCLE

TONTO NATIONAL FOREST

REGION 3

1962

Prepared by:

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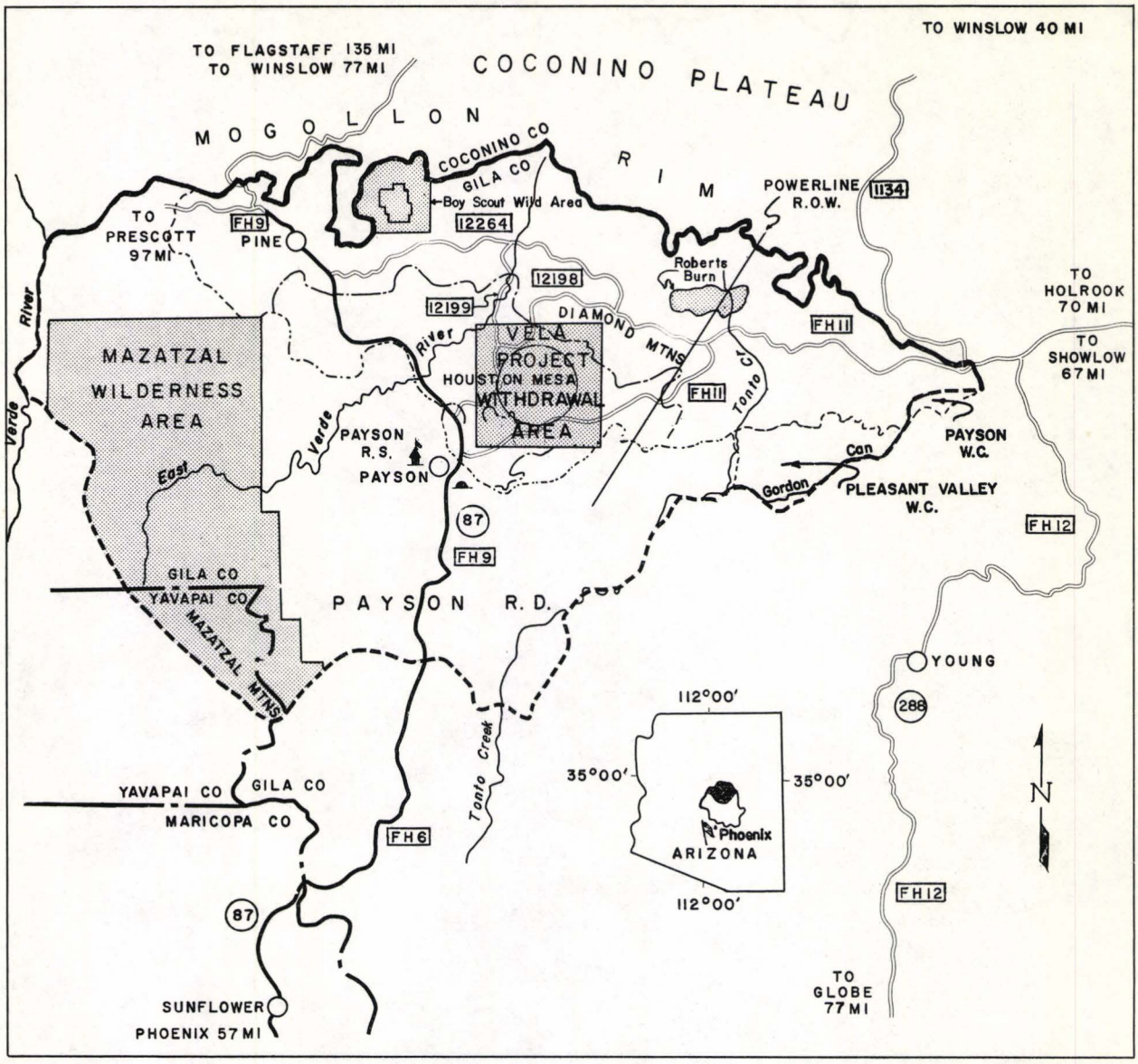
Reviewed by:

Divisions	Forest		Regional Office		Washington Office	
	Initials	Date	Initials	Date	Initials	Date
Timber Management	J.B.	5/31	D.J.K.	6/26	D.J.M.	7/19
Engineering	T.H.S.	6/20	D.F.R.	6/10		
Multiple Use	H.G.	6/20	L.G.W.	6/12	N.R.	7/19



R.H. Cravens July, 1962

LOCATION MAP

PAYSON WORKING CIRCLE

TONTO NATIONAL FOREST

R-3

Scale : 1 0 2 4 6 8 10 Miles

LEGEND

- Forest boundary
- Ranger district boundary
- County line
- Working circle boundary
- Supervisor's headquarters
- Ranger station

ROADS: Federal (66), State (87), Forest (12199)

Mfg. facilities

Working circle, forest, and district boundaries coincide unless otherwise shown.

Additional mfg. facilities : Payson, Heber, Apache Junction, Flagstaff, Snowflake.

Railroads : Southern Pacific at Phoenix and Globe; Santa Fe at Flagstaff, Phoenix, and Prescott

- Commercial forest types
- Sawtimber zone

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II. SUMMARY OF THE PLAN

A. Management Objectives for the Working Circle

The objectives of management for the Payson Working Circle are to:

1. Apply even-aged management. Control cutting by area with volume checks.

2. Make the full allowable cut available. Provide a continuous production of timber at as high a level as economically practicable, giving consideration to both quantity and quality, and in accordance with the principle of multiple-use.

3. Provide the maximum economic support to nearby communities.

4. Schedule sawlog, pulpwood cutting, and precommercial cutting across the working circle in an orderly and workmanlike manner.

5. Complete the initial cut in all remaining virgin stands that are mature and commercially operable. Arrest present heavy mortality losses in these stands.

6. Improve timber utilization and integration of all cutting operations. Reduce waste in logging, pulp cutting, and precommercial thinning. Integrate these operations more closely. Harvest all usable dead or deteriorating timber as fully as possible.

7. Integrate timber use more fully with the other forest land uses. Improve integration of other uses with timber use. Make the management of the timber resource a prime example of the multiple-use management concept in action.

8. Develop the rest of the road system needed for timber harvesting, and for administrative and recreational use.

9. Disease will be removed from the stand through cutting practices.

10. Obtain prompt and complete regeneration on all cutover or poorly stocked areas and reforest all burned-over or other nonstocked areas.

11. Reduce overstocked stands to optimum density as prescribed in Regional guides. Understocked stands and nonstocked areas will be brought to optimum stocking through growth and through planting or direct seeding.

12. Map each compartment by soil type, by stand age, by stand condition, and by stand site index. Prepare silvicultural prescriptions, make volume estimates, and set up separate records for each compartment.

13. Develop stand growth data for each compartment, based on age, condition, density, and site index.

14. Attain a balance of twenty-year age classes by area. At least one full rotation period will be required. A major adjustment can be achieved over the next 60 years in an orderly fashion.

15. Enter each compartment at least once in every 20-year period.

16. On the sites in the Administrative Working Group protect, improve, harvest, and maintain desirable stands of timber for the uses of the area.

17. Manage the timber stands in the Webber Creek Working Group, using needed silvicultural practices. Operations will be fully coordinated with the special organization and recreational uses of the area. Maximum educational and demonstration values will be obtained from operations in this working group.

18. Combine this working circle with the Pleasant Valley Working Circle in F.Y. 1971, when the reinventory is made, or earlier if possible. By that time forest product measurement and reinventory measurements should be well integrated with forest survey work in Arizona.

B. Area and Volume Summaries

1. Ownership Status

TABLE I

Ownership Class	All Lands Acres	Commercial Forest Lands Acres	Net Volumes Mbf., Scribner	MCF
Areas Within Sawtimber zone				
National Forest	191,447	111,743	268,375	57,969
State	155			
Private	7,742	3,690	3,690 1/	719 1/
Subtotal	199,344	115,433	272,065	58,688
Areas Outside Sawtimber zone				
National Forest	230,172	12,000	20,000 1/	3,899 1/
State	--			
Private	4,042			
Subtotal	234,214	12,000	20,000	3,899
TOTAL	433,558	135,433	292,065	62,587

1/ Estimated

2. Commercial Forest Land, National Forest Only

Table 2

Stand Size or Condition Class	Acres	Scribner Bd. Ft. Stems 11.0" and over d.b.h. to 8" top d.i.b.	Cu. Ft. Stems 5.0" and over d.b.h. to 4" top d.i.b.
Virgin Sawtimber	48,738	126,999,051	27,455,571
Cutover Sawtimber	30,675	69,295,075	16,964,080
Nonstocked	2,105	901,853	178,925
Fringe Sawtimber	5,191	2,224,000	441,235
Administrative Areas	13,335	48,597,674	8,961,120
Subtotal Operable	100,044	248,017,653	54,000,931
Inoperable Sawtimber	11,699	20,356,952	3,968,217
Total, Commercial	111,743	268,374,605	57,969,148

3. Other Forest Lands, National Forest Only

Table 3

Land Class or Condition Class	Acres	Volumes	
		Scribner Bd.Ft.	Cu. Ft.
Areas Within Sawtimber Zone			
Nontimbered Administrative Areas	7,423	--	--
Woodland	45,154	--	--
Grassland	1,300	--	--
Brush	25,827	--	--
Total	79,704		
Areas Outside Sawtimber Zone			
Mazatzal Wilderness			
Timbered	12,000	20,000,000	3,898,635
Woodland	12,160	--	--
Chaparrel	43,243	--	--
Grassland	20,480	--	--
Total	87,883	20,000,000	3,898,635
Other Forest Lands			
Chaparrel	16,640	--	--
Woodland	64,000	--	--
Grassland	61,649	--	--
Total	142,289		
Total Outside	230,172	20,000,000	3,898,635
Total, Other Forest Lands	309,876	20,000,000	3,898,635
Total, Working Circle	421,619	288,374,605	61,867,783

4. Commercial Forest Lands by Forest Type

Table 4

Forest Type	Acres	Scribner Bd. Ft. Stems 11.0" and over d.b.h. to 8" top d.i.b.	Cu. Ft. Stems 5.0" and over d.b.h. to 4" top d.i.b.
Operable			
Ponderosa Pine	97,867	237,320,987	50,182,473
Mixed-Conifer	2,177	10,696,666	3,818,458
Subtotal	100,044	248,017,653	54,000,931
Inoperable			
Ponderosa Pine	9,036	15,429,337	3,007,668
Mixed Conifer	2,663	4,927,615	960,549
Subtotal	11,699	20,356,952	3,968,217
Total, Commercial	111,743	268,374,605	57,969,148

C. Growth

1. Periodic Annual Increment

Table 5

Forest Type	Total Per Type		Weighted Per Acre Averages	
	MM Bd. Ft. Net Scribner	Net M Cu. Ft.	Bd. Ft. Net Scribner	Net Cu. Ft.
Ponderosa Pine	6.390	2,003	65	20
Mixed-Conifer	0.251	94	115	43
By Working Circle	6.641	2,097	66	21

2. Potential Mean Annual Increment

Table 6

Forest Type	Total Per Type		Weighted Per Acre Averages	
	MM Bd. Ft. Net Scribner	Net M Cu. Ft.	Bd. Ft. Net Scribner	Net Cu. Ft.
Ponderosa Pine	11.551	3,792	118	39
Mixed-conifer	0.274	103	126	47
By Working Circle	11.825	3,895	118	39

D. Regulation

	Technical Working Group	Administrative Working Group	Webber Creek Working Group
1. Control	Area	Area	Area
2. Cutting Period Sawtimber	20 years	20 years	20 years
2a. Entry for Pulpwood*	10 years	10 years	10 years
3. Rotation Age	110 years	190 years	150 years
4. Rotation Period	120 years	200 years	160 years

*Compartments should be examined at least every 10 years to determine the need for possible silvicultural treatment.

E. Allowable Cut and Cutting Limitations

1. Available Cut for Planned Period

Table 7. Sawtimber Size

Kind of Cut	Acres	Average No. of Compartments	MM Bd. Ft. Net Scribner Rule	M Cu. Ft. Net
Regeneration (Harvest)	681	1	1.250	243.665
Intermediate	4,321	4	3.100	604.288
Total	5,002	5	4.350	847.953

Table 8. Other Products

Kind of Cut	Pulpwood	
	M Cu. Ft.	Cords
Intermediate	751.23	8,838

No cutting of pulpwood is planned this cutting period in regeneration cut areas.

2. Cutting Limitations

This plan recognizes that cyclic market conditions will cause fluctuations in the annual cut of timber. Average volumes per acre vary considerably within the operable area. The annual cut acreage and the annual available cut is a goal to strive for, but market conditions will determine the actual cut in any one year. Therefore, the annual cut must be balanced only by 10-year periods, rather than annually. Overcutting in any working group should not exceed 10 percent of the allowable 10-year cut during this 10-year period. Undercuts may be made up any time during the cutting period.

F. Plan Revision

This plan will be revised by June 30, 1971. By that time this working circle and the Pleasant Valley Working Circle will be combined. One plan will be prepared then to cover all the timbered areas of the Tonto National Forest.

Interim revisions to the plan will be made if necessary, following disastrous fires, unusually heavy timber mortality, significant changes in product utilization or land ownership, or other conditions which the Forest Supervisor considers makes this plan inoperable.

The action plan - Sections VI, VII, VIII, and maps - will be revised annually by March 1, as needed, by the Forest Supervisor and will be submitted to the Regional Forester for approval. Changes in the budgets of entry, in transportation planning, or in the cutting budget, may also be made at this time.

G. Coordination with Other Uses

The Payson District Multiple-Use Plan provides the guidelines for coordinating timber production with the other uses. This working circle timber management plan will set up the silvicultural practices to be used to produce the desired timber stands for all working groups in the working circle. It also provides guidelines for the management of timber on recreation areas and for the special Webber Creek Working Group.

III. INTRODUCTION

A. Description of Working Circle

The working circle lies north and east of the fast-growing village of Payson, Arizona.

It includes all the timberland from a low divide between Turkey Peak and the Mogollon Rim to the east, and to Hardscrabble Mesa on the west. It is bounded on the north by the rugged Mogollon Rim which is an impassable logging barrier and on the south by the Payson Ranger District boundary.

In general, the topography of the unit is rough. The unit is broken into relatively small areas by several deep canyons, so that various areas must be approached from different directions. This results in the rather expensive construction of separate roads for the exclusive use of each of the several separate logging units. The soil is largely derived from limestone and sandstone. Much of it is shallow and rocky with many rock outcrops.

This is one of the highest water-yielding areas on the forest. Forage production is low, but the area supports many deer, elk, and turkey. There are a few fishing streams which receive very heavy use. The recreation use on this area is extremely heavy now and rapidly growing even more so. Paved roads entered the working circle from Phoenix late in the 1950's for the first time. They are rapidly being extended toward Holbrook, Winslow, Flagstaff, and Pleasant Valley.

B. Description of Timber

The working circle has small amounts of Douglas-fir and white fir near the heads of the deeper canyons just under the Mogollon Rim. Except for these, all the timber on the working circle is ponderosa pine. Noncommercial species with best future possibilities for use are Arizona cypress and alligator juniper. These occur within the commercial pine zone and below and south of it.

Pine stands in this working circle have several coincident age classes. They contain much heavy dwarfmistletoe infection and a great deal of bark beetle infestation in both ponderosa pine and Douglas-fir. The widespread population of Thridolepsis inornata, a weevil, on white fir and Douglas-fir has done no damage to date. Much of the timber is fringe type. This is true throughout the working circle, in addition to the fringe type along the southern lower edge of the timbered zone. This is true in the rocky ledge areas just under Mogollon Rim and on many other low rocky ridges throughout the working circle. On these ridges there is usually a dense cover of manzanita with an overstory of six or less scattered pines per acre.

Most of the timber is poor quality, being fringe type. The trees are short, fast-tapering, and run high in defect. On a considerable part of the unit the older timber is rather scattered, occurring in groups with a small volume per acre. The stand, however, is composed of all age groups and in general is well stocked with reproduction. The eastern half of the unit is covered with an unusually dense pole and small blackjack stand.

The best timber-growing sites are the canyon bottoms. They have many pine thickets containing low-grade trees.

C. Past accomplishments

1. Land Status Changes

There have been no major changes in land ownership since the 1947 Working Circle Plan was written. However, 4,998 acres of timberland in the head of Webber Creek were classified as a recreation area under regulation U-3-A in 1956.

An estimated 4,000 acres of timberland surrounding the villages of Strawberry, Pine, and Payson were classified in 1959 as base to be offered for exchange.

In 1962, approximately 1,300 acres of timbered land of variable commercial value was diverted from sawlog production to a right-of-way for two powerlines which run from the Four Corners area to the Phoenix metropolitan area.

In 1962, about 22,000 acres of land were withdrawn from public use under a special-use permit for the Air Force (VELA Uniform Project) Seismological Laboratory area. More than 80% of this area is below and outside the commercial timbered portion of the working circle.

2. Volume and Area Cutover

Since the inception of the Tonto National Forest, 32,512 acres of this working circle have been cut over. The yield to June 30, 1962, is 46,134 M bd. ft. of sawtimber and 4,500 cords of pulpwood.

3. Timber Stand Improvements

Approximately 90,000 trees on 8,000 acres were pruned on this working circle from 1948 to 1960. Since 1960, a program of thinning overstocked stands of small poles has been started. About 7,600 worthless trees have been destroyed to date.

4. Reforestation

No planting or seeding has been done on this working circle during the period covered by the last management plan.

5. Pest and Disease Control

Wherever possible, logging has attempted to reduce the severity of dwarfmistletoe infections in the stands of the Payson Working Circle. No special dwarfmistletoe eradication or bark beetle control programs have been done during the period covered by the last management plan.

6. Fire Control

Since 1948, there have been about 776 fires on the Payson District. These have burned approximately 5,021 acres and have denuded 2,105 acres of commercial timberland.

D. History of the Working Circle

The valleys in the vicinity of the Payson Working Circle were settled by the Mormon pioneers, beginning in 1877. A small sawmill was put into operation in 1879 at what was then known as Big Green Valley, and is now the community of Payson. It was installed for the purpose of furnishing lumber locally for construction. Very little timber was cut and, according to the meager information available, the mill operated for a very short time only. Practically no evidence of the cut is apparent now. Farming was tried out in the few small valleys available and is still carried on to the extent that the unfavorable climatic conditions and the very small tillable areas available will allow. The residents have depended largely in the past on livestock raising for a livelihood. By about 1890 the ranges were fully stocked with cattle and overgrazing began. This, followed by several good seed years, allowed pine reproduction to come in rapidly in the small parks and openings within the unit. These two factors combined to cut the carrying capacity of the range to such an extent that it is now difficult, if not impossible, to graze stock in the area on a paying basis. On the other hand, the great ingrowth of pine saplings is rapidly increasing the value of the area from a sawtimber-producing standpoint.

The Tonto National Forest was created October 3, 1905, as the Tonto Forest Reserve.

In 1917, the first permanent sawmill was established in what is now the Payson Working Circle. The management of this area was directed by a policy statement from 1927 to 1934. In 1934, the Pine-Colcord Working Circle was established. This working circle included all the sawtimber type in the northern and eastern part of the Tonto Forest. It extended from the White Mountain Indian Reservation on the east to the end of the timber type west of Strawberry--a distance of about 45 miles. It included most of what is now known as the Payson and Pleasant Valley Working Circles. The gross area was 192,724 acres, including 7,033 acres in private land.

During 1934 a 10% strip cruise of the entire Pine-Colcord Working Circle (and the Sierra Anchas) was made and results compiled under the direction of W. G. Thompson.

A formal plan was prepared in 1935 for the decade ending in 1944. It was not revised until 1947 because of additional wartime workload and a lack of personnel.

In 1935 a second sawmill was established in what is now the Payson Working Circle. Only a small volume of timber was cut from the unit by the two mills until shortly after the beginning of World War II. This timber was mostly sold for local use. During the 13-year period that the original plan was in effect, there were removed from the unit 6,455 M feet of sawlogs, cut from 3,471 acres. The cut has grown from 108 M in 1941 to 1,758 M in 1947, and to 4,189 M in 1959. Since that date, poor market conditions have kept the annual cut temporarily below 1959's rate. One mill is still operating in the working circle today. It now has a maximum capacity of about 50 M per day.

In 1946, Fred McCament revised the 1934 cruise figures. Original estimates of defect were modified on the basis of check scales made from 1935 through 1946. McCament also made a 10% recruise of the small area cut over between 1935 and 1945.

The Pine-Colcord Working Circle was split into two separate working circles at that time. These were the Payson Working Circle and the Pleasant Valley Working Circle, with the Sierra Ancha Block outside of both.

Thomson's data, as modified by McCament in 1946, was the basis for the new management plan prepared for the Payson Working Circle in 1947.

For the period 1948 to 1967, inclusive, the new plan called for an annual 3.5 million board feet cut from the Payson Working Circle. This was to come from light selection cuts throughout the working circle, taking 40% or less of the volume in the remaining virgin stands. The goal of the plan was to build up thrifty, well-distributed reserve stands with volumes of 3,000 to 4,000 board feet per acre, in trees of 24" d.b.h. and smaller.

In the 14 years this 1947 plan has been in effect, about 35,000,000 board feet have been cut. This is only 71% of the allowable annual cut of 49,000,000 board feet for the same period.

The Payson Working Circle is part of the area which was contracted in 1957 to produce pulpwood for the new paper mill at Snowflake, Arizona. The present estimated annual pulpwood obligation of this working circle is 8,838 cords.

An inventory of the pulpwood in the working circle was made in 1960-1961. Pulp-cutting operations began on the Tonto in December 1961.

IV. PROBLEMS

A. Timber Harvest

Topography consists of a series of rolling hills and mesa-like ridges cut by deep canyons. Solid rock outcrops occur throughout the area. Soils are of granitic derivation and highly erosive. Logging problems and costs increase on the steeper slopes under the rim.

B. Timber Utilization

As cutting progresses back to cutover areas, following virgin harvesting, it is thought that average sawing sizes will get smaller.

C. Recreation Use

Recreation use is making an impact on Tonto timber production. Better timber sites are being used for recreation sites. In all cases on these areas, cuts per acre are reduced and, due to the special precautions necessary, logging is becoming uneconomical over sizeable acreages.

D. Industrial Conflicts

The new Arizona Public Service 345 KV lines, the Phelps Dodge flume and power line, and the new major highways are removing sizeable timbered acreages from sawtimber production. This will reduce timber yields over the long run.

E. Animals

Grazing must be restricted on planting sites for the first few years of tree growth. Fencing will be necessary. At present, wildlife does not appear as a problem in obtaining satisfactory regeneration.

F. Fire

Special slash measures are necessary along roads, recreation areas, and other rights-of-way. In limited areas over a limited period, slash from precommercial thinning will increase the hazard. However, in most cases, after 3 years elapsed time fires should stay on the ground and make control easier. The major factor from a fire-control standpoint is human use, both from permitted uses and from intermingled private enterprises in the timbered areas.

G. Summer Home Areas

Summer home areas in the pine sites fall in the same category with recreation sites.

H. Competition

Alligator juniper invades and pre-empts many of the pine sites on the Payson Working Circle following fire or cutting operations. Control of alligator juniper must be considered an integral part of all planting, timber-stand improvement, and cutting operations in the working circle.

V. MANAGEMENT PRESCRIPTIONS

Three working groups are established. Most of the timbered area will be in the Technical Working Group. All of the roadside zones, streamside zones, forest camps, picnic grounds, summer home areas, and administrative sites will be in the Administrative Working Group.* The Webber Creek Working Group is established for the Boy Scout special-use area.

A. Silvicultural System

Even-aged management will be practiced. The seed tree or shelterwood cutting methods will be used in stands set up for regeneration in all working groups. The size of the regeneration areas will be reduced in the Webber Creek Group and the Administrative Working Group, compatible with multiple-use objectives. On categories one and two, areas the size of the regeneration area may be reduced to that occupied by a single tree.

B. Rotations

	Technical Working Group	Administrative Working Group	Webber Creek Working Group
Rotation Age	110	190	150
Rotation Period	120	200	160

C. Methods of Cutting

Refer to FSH 2411.11 and 2413.14 for detailed descriptions of each cutting method.

The methods of cutting are grouped broadly into two main classes: intermediate cutting and reproduction cutting.

1. Intermediate Cuts

These will include any one or more of the following at each time of entry:

a. Initial Cut in Virgin Stands

This cut is a combination of the other intermediate cuts. Its purpose is quick removal of trees that are not expected to live until a reproduction cut or a subsequent intermediate cut is made.

---

*Trailside zones and waterfront zones are also part of the Administrative Working Group

b. Sanitation Cut

This cut is made to remove trees infected with disease or infested by insects.

c. Risk Cut

This cut is made to remove trees likely to die before the next periodic cut.

d. Improvement Cut

This cut is made to remove trees of poor form and/or poor genetic qualities.

e. Thinning Cut

This cut is made to improve growth rate in the residual stand by reducing the stands to their optimum basal area.

f. Salvage Cut

This cut is made to remove merchantable dead or dying trees. Salvage cuts will be planned on an annual basis. Volumes from these cuts are chargeable to the allowable cut.

2. Reproduction Cuts

Reproduction will be established naturally, if possible, by the two-cut system--seed-tree cut and removal cut. If a seed crop is not evident, direct seeding will be done underneath the seed tree cover.

a. Seed Cut (Preparation Cut)

This cut will be made to reduce the stand to the number of seed trees which are needed to provide seed for reproducing the area. This cut also provides the openings where reproduction may be started. During this cut the site will be prepared to receive the seed.

b. Removal Cut

When adequate reproduction above browse height has been established, the seed trees will be removed. If reproduction cannot be established from seed, the seed trees will be removed and the stand will be established by planting. Where adequate advance reproduction exists, the seed cut will be bypassed and all the overstory removed in the removal cut.

c. Initial Cut in Virgin Stands

In order to obtain proper distribution of the 0-20 year-old age class, it will be necessary to make some seed cuts during the initial cut in virgin stands. These seed cuts must be programmed and planned as a part of the initial cut.

Ordinarily the regeneration areas will be in blocks of 100-500 acres, but the size and shape will be governed by ground conditions, by topography, by economic consideration, and by multiple-use objectives.

D. Stand Priorities

Stand priorities for cutting are established in accordance with silvicultural factors and utilization principles.

First priority in this working circle is to make the initial harvest in virgin stands. Generally stands will be cut in the following order:

1. Virgin stands.

2. Stands killed or badly damaged by fire, insects, disease, or wind.

3. Stands heavily infected with dwarfmistletoe.

4. Stands where reproduction must be established. This will be done in stands that are understocked, are of low quality, or are "orchard" type stands.

5. Stands with above optimum basal area stocking.

6. Stands over rotation age.

E. Special Treatments

1. Recreation Areas

These areas will be managed as a part of the Administrative Working Group.

On the areas classified for recreation use, timber should be managed so that it will provide a pleasing forest setting. This can be attained by managing the stands for varied age classes. Also, this type of management will provide for continuous replacement by vigorous trees capable of withstanding insects, disease, and soil compaction. Commercial sales, insofar as possible, will be used to harvest safety-hazard trees and sanitation and risk trees, as the initial period cut.

If necessary, regeneration will be done by planting, by direct seeding, or by other methods, to secure the stocking needed for recreation purposes.

Young stands will be thinned to promote rapid growth and large trees for aesthetic purposes. These young, vigorous trees will thus replace the diseased and decrepit trees which are often threats to public safety.

Harvest of rotation-age trees during succeeding cutting periods will provide for orderly replacement. Older trees may be retained if they are healthy or if they do not constitute a hazard to the public and are needed to improve aesthetics.

The cutting period, for the purpose of organization, is established at 20 years. Intermediate selective removals may be made as necessary to salvage mortality until the desired distribution of age classes is present. Junipers, pinyon, and hardwoods will be exceptions to rotation planning.

a. Stands on sites and/or areas reserved and developed for intensive recreation use. Planners of the Divisions of Timber Management and Recreation and Lands Management will jointly prepare an action plan to provide replacement trees for recreation-use areas. Eighty years of optimum growth will be needed to culture trees to a size desirable for recreation purposes. Therefore, the plan will be made from an inventory which identifies those trees which will need to be replaced during the next four cutting periods.

All trees above the 120-year-age class will be so identified, in addition to safety-hazard trees and sanitation and risk trees. Trees below the 120-year-age class can be considered as replacements if they are healthy and are either free to grow or can be released. The plan will make provisions for thinning, pruning, and planting to culture desirable replacements.

Pruning will often require special criteria and technique. Pruning for stand sanitation will be done as required to maintain a healthy, productive stand. Other pruning should be done on a plan-wide basis in order to gain a variety of views, or for other purposes of recreation and timber-resource management.

b. Stands on sites and/or areas designated for recreation but not yet developed. These are potential sites and areas which should be treated by commercial sales at the earliest opportunity. The desired stand-age at time of development for recreation should be 120 years and younger, with distribution through the younger age classes. Therefore, new recreational developments should be made in stands 120 years of age and younger. Trees over 120 years old may be retained if they are healthy or if their retention is desirable to improve the overall aesthetics of the area.

c. Stands on lands designated for near-natural recreation management, such as buffer zones, roadside zones, and waterfront zones, where cutting is permitted. Area regulation is the desirable management system to use. The objective will be to maintain a normal distribution of age classes. The optimum situation would be to have one-tenth of such recreation land in each of the 20-year-cutting periods. This will require timber-type classification of the stands by age classes. Once the type and area by age class are known, management should be aimed toward making up any deficiencies in the age classes. At the same time, each stand should be treated according to its silvicultural needs.

Silvicultural treatment will be:

(1) Artificial regeneration where necessary to complete the stocking needed for recreation purposes.

(2) Thinning, to culture younger age-class trees into large-size trees. Thinning to open up the roadside screen and give depth to the view under crowns of existing trees.

(3) Removal of safety-hazard trees and sanitation and risk trees.

(4) Harvest-cut trees, either singly or in groups, that are over rotation age. This will release younger stands, create openings of a fraction of an acre where regeneration is needed, and will provide for orderly replacement by younger age classes.

(Treatments (2), (3), and (4) should be done in the nonrecreational season.)

The remaining forested lands not specifically designated for recreation purposes receive more recreation visits than any other for purposes of viewing fall coloring, hunting, fishing, and enjoying the forest environment. All presale prescriptions should consider aesthetics such as the reservation of some aspen stands on hillsides, the arrangement of regeneration areas, the protection of meadows, the reduction of roadside logging slash and debris, and similar practices. Refer to other guidelines in FSH 2413.15a.

2. Pine Creek Watershed Area

Pine Creek is an important fishing stream and is important as a source of safe water for the village of Pine. Access to much of the timber in this canyon is difficult because of steep topography.

Soil disturbance must be held to a minimum in this watershed. Road construction projects and timber sale operations in this drainage will provide for careful attention to soil stabilization.

3. Watershed

The entire working circle is part of the important Salt River watershed, which serves the growing Phoenix area. A major objective of forest management is production of good-quality water and control of stream sedimentation. The forest is the prime protector of water quality.

The delineation of regeneration areas should be such that watershed values are protected. Soil disturbance necessary for the regeneration of trees must be allowed for the increased benefit derived from the resulting timber stand. This soil disturbance must be done in a manner which will minimize soil losses. On devastated areas, burns, etc., vegetative competition will be eliminated either by removal in strips placed on contour, or by removal on larger areas where the disturbed soil will be terraced by contour plows.

Logging damage must be minimized by proper location of roads and skid trails. Check dams will be built and grass species will be renewed by seeding on all but regeneration areas.

4. Webber Creek Working Group

The Webber Creek area is discussed on page 17 of the multiple-use plan of the Payson Ranger District approved October 19, 1960.

The plan states that the Timber Management Plan should provide for management of the timber resource including cutting. The U-3 withdrawal was revised in May 1961 to allow for timber harvest and cultural operations.

This area has been made a compartment for management. The compartment examination should be made in accordance with provisions of this plan. The timber should be managed for the recreation use in accordance with FSH 2413.22 and the section of this plan covering recreation areas.

Special requirements may be necessary to coordinate logging with the major use of the area. Investments by the permittee must be protected. Logging should be carried out during periods that will cause as little interference with the users of the area as is consistent with accomplishing the objectives of management.

The area is large enough to organize into a normal distribution of age classes. This should be provided for in the compartment prescription. The prescription objectives and methods of accomplishment should be utilized for their educational value in this area.

There is no restriction on use of the National Forest area by the general public.

5. Power line rights-of-way

Special-use permits will specify that the land underneath power lines may be used for other forest purposes. It is planned that wildlife browse-and-feed species may be grown on this land. As suitable, Christmas trees or pulp-sized trees may be grown on this land. The land may be used for such other forest purposes so long as they do not interfere with the power lines.

6. Wildlife

Wildlife habitat needs will be considered in the prescription for each compartment and timber sale. Guidelines are detailed in FSH 2413.15c.

F. Precommercial Cleaning and Noncommercial Thinning and Release

There are many stands of saplings and small poles that need precommercial cleaning and thinning. This thinning should reduce the stand basal area to a level that is compatible with optimum growth for the site capabilities.

A 10-year-thinning program is shown in Section VIII, C, and on a map in the appendix.

G. Commercial Thinning and Pulpwood Cutting

The primary objective of commercial thinning is to reduce the stand density by utilizing cut material for forest products and by leaving a residual stand basal area which is determined to be optimum for its site capability and age class.

At present the Payson Working Circle is under contract to provide wood for the pulpwood mill at Snowflake, Arizona. The Tonto National Forest is obligated to furnish Snowflake with 18,800 cords of pulpwood annually. It is estimated that 8,838 cords will come from the Payson Working Circle.

A pulpwood inventory has been completed. This has located the operable stands on the ground. Stands which need thinning should be entered as the market develops. Little can be gained by reserving pulpwood volume since eventually some will grow into sawlog sizes and others will be lost through mortality. Emphasis should be on regeneration and silvicultural treatment to produce the necessary quantities of wood for the contract.

After cutting progresses, a firm estimate, based on historical data, can be developed for the pulpwood annual yield.

A 10-year-pulpwood-cutting budget is shown under Section VI, G, and on a map in the appendix.

H. Cutting of Other Products

White fir and pinyon pine Christmas trees are available for cutting by the general public and for commercial operators. A cutting budget for this product is not deemed necessary at this time.

There is an ample supply of pinyon and juniper fuelwood available to meet presently anticipated demand.

Other products, in minor quantities, such as poles and house logs, are harvested on this working circle. No restrictions on their harvest are deemed necessary at this time. Harvest of these minor products is unregulated.

ACTION PLAN

1962 TIMBER MANAGEMENT PLAN
Payson Working Circle
Tonto National Forest

Sections VI, VII, VIII, and IX

REVIEW AND REVISION CONTROL SCHEDULE

Fiscal Year	Forest Supervisor						Regional Forester	
	Reviewed by:		Revised by:		No Rev. Needed		Approved by:	
	Name	Date	Name	Date	Name	Date	Name	Date
1962	Working Circle Plan Prepared by Edwin H. Weil, Jr., 11/15/62							
1963								
1964								
1965								
1966								
1967								
1968								
1969								
1970								
1971								

Revised Working Circle Plan Prepared by: _____, Date _____

VI. MANAGEMENT CONTROLS

A. Inventories

The inventory of the Payson Working Circle was completed in Fiscal Year 1961. It consisted of 254 quarter-acre circular plots. The standard error of estimate of the inventory is ± 8.18% (two times out of three). A timber-type map was prepared for the entire working circle, using new type symbols which are shown in the appendix.

This working circle will be reinventoried in F.Y. 1971.

B. Compartment Examination

The working circle was divided into large compartments at the time the pulpwood inventory was completed in 1961. These are large compartments, over 5,000 acres in area. These large compartments will be divided into smaller compartments of approximately 1,000 to 5,000 acres in size. This division will be done on the ground at the time compartment examination of each compartment is made.

Each compartment will be examined prior to entry into the compartment for sales or cultural treatment. Aerial mosaics and aerial photos will be used in the examination. The individual stands in each compartment will be identified and delineated into age classes, or nonstocked areas, and the proper silvicultural treatment prescribed. Eventually compartment examination will be completed two years before each entry.

The following is the 10-year schedule for compartment examination. Washington Park compartments will be examined at the time volume and quality determination is made for future sales. Pulpwood sales are in process now and a definite schedule has not been set up for compartment examination. The goal will be to catch up on the backlog and get two years ahead of the operations as per the cutting schedules.

TABLE 9

Compartment Examination Schedule

Fiscal Year

Compartment No.	Examination Planned	Cutting Planned		Cultural Operation Planned		
		Sawtimber	Pulpwood	Planting	Thinning	Other
6	1964		1966			
7	1965		1967-8			
8-1	1967		1969			
8-2	1968		1969			
11	1968		1970			
12	1968		1970			
9	1969		1971			
10	1969		1971			
4	1963		1965			
15	1963		1965			
14	1963		1965			
5	1964		1966			
13	1964		1966			
1	1964				1966	
17	1965				1967	
16	1965				1967	
18	1965				1967	
2	1963		1964			
3	1963		1964			

C. Regeneration Controls

Regeneration controls will be prescribed at least three years in advance of cutting. This advance notice provides time to make necessary adjustments in grazing programs, game herd use of area, and to control rodents or other pests.

Provision should also be made to protect the area from wildfire, disease, and insects. Reproduction will be protected from animals until it is above browse height.

The regeneration areas will be outlined on a compartment map and treatment will be prescribed to establish reproduction. Once the area is declared regenerated, the area will be recorded on the timber atlas as a 0-20 year age class. The following type of control record will be maintained.

Sample Regeneration Control Record

Compartment and Block No.	Reproduction Cuts				Planting and Direct Seeding				Adequate Stands Above Browse Height
	Seed Cut		Removal Cut		Deforested Areas		Understocked & Reproduction Cut Areas		
	Acres	Date	Acres	Date	Acres	Date	Acres	Date	

D. Calculation of Planned Cut

Harvesting and entry will be controlled by area, with volume checks. Volumes to cut were determined on the ground at the time of the inventory. Volumes cut on a particular acre will be controlled by need and by basal area controls. The stands will be treated silviculturally. Area can be selected to harvest approximately the same volume annually. As historical cutting records are developed for each five-year period, the allowable cut can be adjusted by experience.

Calculations for determining the allowable cut are in the appendix.

E. Marking Rules

Refer to Regional marking guides now in practice and others due out to the field soon. Heavily dwarfmistletoe-infected stands may be given high priority for regeneration cutting.

F. Records

These will be kept in accordance with Regional requirements. Some records we know we will need are listed below. More will be developed later, as needed.

1. Written records of area treated or cut over annually.

   a. Regeneration cuts
   b. Intermediate cuts
   c. Noncommercial cultural operations
   d. Planting or seeding

2. Maps

   a. Stand conditions
   b. Budgeted compartments by years
   c. Area cut over in reproduction cuttings and intermediate cuttings by years
   d. Noncommerical cultural operations needed and accomplished by years
   e. Planting and seeding needed and accomplished by years

G. Cutting Budget

The following schedules of sales for this 10-year period for sawtimber and for pulpwood have been established.

Table 10.

Sawtimber Cutting Budget - 10 years

Fiscal Year	Sale Name	Map No.	Total Acres	Total Volume in Sale Mbf Scribner	Fiscal Year Cut	
					Acres	Volume Mbf Scribner
					5,002*	4,350*
1963	Hardscrabble	2	3,300	2,400		
	Myrtle Point	1	35,267	20,810		
1964	Hardscrabble	2	3,300	2,400		
	Washington Park	3	13,000	26,000		
1965	Washington Park	3				
1966	Washington Park	3				
1967	Washington Park	3				
	Milk Ranch Point	4	13,000	26,000		
1968	Milk Ranch Point	4				
1969	Milk Ranch Point	4				
1970						
1971						

F.Y. 1962 cut has been completed.

*Planned Annual Cutting Rate.

Table 11

Pulpwood Cutting Budget - 10 Years

Fiscal Year	Compartment No.	Total Acres	*Total Pulp Vol. in Cords	Fiscal Year Cut	
				Acres	Vol. (Cords)
1962	1	7,642	22,543.90	274.5	848.55
	2	8,484	25,027.80	22.5	127.11
	4	10,349	30,529.55	135.0	384.31
	5	7,437	21,939.15	48.0	261.64
	13	11,085	32,700.75	235.0	1,161.10
	15	8,819	26,016.05	55.0	658.87
			Total F.Y. 1962	770.0	3,441.58
**1963	1	7,642	22,543.90	665.2	2,884.35
	2	8,484	25,027.80	286.2	1,504.20
	5	7,437	21,939.15	22.0	124.37
	13	11,085	32,700.75	268.0	1,323.53
	14	6,675	19,691.25	317.2	1,509.94
	15	8,819	26,016.05	170.0	2,046.15
			Total F.Y. 1963	1,728.6	9,392.54
1964	2	8,484	25,027.80	847.5	2,500.00
	15	8,819	26,016.05	847.5	2,500.00
			Total F.Y. 1964	1,695.0	5,000.00
1965	2	8,484	25,027.80	565.0	1,666.66
	15	8,819	26,016.05	565.0	1,666.66
	16	3,661	10,799.95	565.0	1,666.68
			Total F.Y. 1965	1,695.0	5,000.00
1966	2	8,484	25,027.80	565.0	1,666.66
	15	8,819	26,016.05	565.0	1,666.66
	16	3,661	10,799.95	565.0	1,666.68
			Total F.Y. 1966	1,695.0	5,000.00
1967	3	9,466	27,924.70	847.5	2,500.00
	14	6,675	19,691.25	847.5	2,500.00
			Total F.Y. 1967	1,695.0	5,000.00
1968	3	9,466	27,924.70	847.5	2,500.00
	14	6,675	19,691.25	847.5	2,500.00
			Total F.Y. 1968	1,695.0	5,000.00
1969	4	10,349	30,529.55	1,695.0	5,000.00
1970	4	10,349	30,529.55	847.5	2,500.00
	5	7,437	21,939.15	847.5	2,500.00
			Total F.Y. 1970	1,695.0	5,000.00
1971	5	7,437	21,939.15	847.5	2,500.00
	13	11,085	32,700.75	847.5	2,500.00
			Total F.Y. 1971	1,695.0	5,000.00

*Based upon 2.95 cords/ac as shown on pulp inventory.
**Estimated figures based upon actual cutting up to March, 1963.

VII. TIMBER DISPOSAL POLICIES

A. Sales

The present policy is to make sawlog sales that will include approximately a 5-year cut. This would indicate that the next sawlog sale on the Payson Working Circle will be for approximately 20,000,000 board feet.

No control of annual amount sold by compartment is contemplated at this time. There are no blocks.

B. Point of Manufacture

It is not necessary or desirable to have any specific requirements for points of manufacture in the sale of National Forest timber from this working circle. The mill at Payson can handle the full sawtimber allowable cut.

C. Utilization Standards

Trees in the 11- to 17-inch d.b.h. classes can be sold to either the pulpwood or sawlog market under present contract specifications. With a band mill the sawtimber operator may use 9- to 10-inch size trees.

D. Erosion Control

Special erosion control work will be planned and carried out, wherever needed, to prevent or repair undesirable soil disturbance and movement. This will be necessary particularly on the steeper slopes near the upper limit of accessibility and on the soil types which future soil surveys identify as most erodible. (See V, E - Special treatment, of this plan; Payson Multiple-Use Management Plan, pages 8 and 9, #5, FSH 2561.1).

E. Special Sales

1. Use of minor forest products will be encouraged. The possibility of use of manzanita for charcoal will be explored and, if a market can be developed, such use will be promoted actively.

2. Commercial use of Arizona cypress, alligator and Rocky Mountain red junipers, and pinyon for closet linings, hope chests, table tops, and similar products will be encouraged.

VIII. FOREST DEVELOPMENTS

A. Transportation

The primary road system necessary for timber harvest on the Payson Working Circle has already been established. Only the secondary roads and the spur roads will have to be constructed as harvesting operations progress. However, it will be necessary to rebuild some portions of the existing roads as well as extending some of these existing roads.

Table No. 12 lists the proposed road program for the next 10-year period. Details of the long-range road construction projects for the Tonto National Forest as a whole can be found in the 12-year road and trail program plan. This plan was revised in August 1960.

It will be necessary to modify this transportation plan as the timber sales program is modified. This modification will take place along with the timber sales changes.

B. Reforestation

There is plentiful evidence in old burns and along road construction sites that ponderosa pine will regenerate itself if given a seed source and adequate protection.

The system of management herein described will provide for an adequate seed source. Protection from livestock and wildlife will be prescribed as necessary.

Direct seeding of non-stocked areas is planned at this time. It will be necessary to direct-seed some of the past burns. Before any seeding takes place, a juniper-control program is necessary. This juniper-control will take place on a planned basis and seeding with pine will follow immediately.

Seeding will be accomplished in the next 10 years. There are 2,105 acres to be reseeded. This will necessitate an annual regeneration of 211 acres. All of this area is within the ponderosa pine zone.

Table 12.

Timber Harvest Road Construction Program

Sale Name - Washington Park

Road Name	No.	F.S. Road Standard	MILES			COMPLETION TARGET DATES		COSTS
			Total	Primitive	Non-existent	Survey	Construction	For F.S. Standard
Pieper Hatchery	1232	DN 24 paved	5.0	2.0	3.0	9/63	7/65	$216,450*
Mail Cr.	1232A	SL 12	1.0	1.0	--	9/63	7/65	8,190
Chase Cr.	12437 (12061)	SL 12	4.0	2.0	2.0	9/64	7/66	32,760
Dude Cr.	12263	SL 12	1.6	--	1.6	9/63	7/65	13,114
Dude Cr.	12195	SN 12	1.0	1.0	--	9/63	7/65	11,700
Control Rd. No. 2	12274	SL 12	0.3	--	0.3	9/64	7/66	2,457
North Sycamore	12273	SL 12	1.5	--	1.5	9/65	7/67	12,285
Bray Sycamore Divide	12438 (12062)	SN 12	3.0	0.5	2.5	9/65	7/67	35,100
Bray Cr.	12439 (12063)	SL 12	2.0	--	2.0	9/66	7/68	16,380
Little Diamond	12233	SL 12	2.0	--	2.0	9/66	7/68	16,380
			21.4	6.5	14.9			$364,816

*This high standard is necessary to facilitate multiple-purpose use in addition to timber use.

C. Timber Stand Improvement

Cultural practices on the Payson Working Circle will be adjusted by compartments as each compartment is examined. Table 13 lists the 10-year program.

Thinning will be the major Timber Stand Improvement practice on the working circle. Efforts will be made to establish a market for the resulting products, easing the load of putting the stands into optimum condition. It may be possible to sell the small pieces resulting from thinning to recreationists and summer home owners for fuelwood, but this needs further investigation. Regional guidelines as established by the Timber Management Divsion in the Regional Office will govern thinning practices.

Pruning will be a very minor program over the working circle due to the high incidence of dwarfmistletoe throughout the pole stands.

Region Three guidelines, as established, will govern practices under this program.

Table 13

Thinning Schedule - 10 Years

F.Y.	Compartment No.	Total Acres in Compartment	Acres to be thinned each F.Y.	F.Y.	Compartment No.	Total Acres in Compartment	Acres to be thinned each F.Y.
1963	1	7,642	274.5	1967	2	8,484	565
	2	8,484	22.5		15	8,819	565
	4	10,347	135.0		16	3,661	565
	5	7,437	48.0		Total F.Y. 1967		1,695.0
	13	11,085	235.0	1968	3	9,466	847.5
	15	8,819	170.0		14	6,675	847.5
	Total F.Y. 1963		770.0		Total F.Y. 1968		1,695.0
1964	1	7,642	665.2	1969	3	9,466	847.5
	2	8,484	286.2		14	6,675	847.5
	5	7,437	22.0		Total F.Y. 1969		1,695.0
	13	11,085	268.0	1970	4	10,349	1,695.0
	14	6,675	317.2		Total F.Y. 1970		1,695.0
	15	6,819	170.0	1971	4	10,349	847.5
	Total F.Y. 1964		1,728.6		5	7,437	847.5
1965	2	8,484	847.5		Total F.Y. 1971		1,695.0
	15	8,819	847.5	1972	5	7,437	847.5
	Total F.Y. 1965		1,695.0		13	11,085	847.5
1966	2	8,484	565.0		Total F.Y. 1972		1,695.0
	15	8,819	565.0				
	16	3,661	565.0				
	Total F.Y. 1966		1,695.0				

D. Fire Control

Fire control activities on the working circle will continue on the high plane set in the past. Fire control plans are set forth in the Tonto National Forest Fire Plan which is revised annually. Individual sales will have a specific fire plan included in the timber sale contract as required.

Thinning operations will increase the fire danger somewhat for about 3 years. After that the fire danger will actually be less than previous to thinning, due to the reduced density of stems.

E. Rodent Control

Rodents are not a problem as yet on the working circle. There is little evidence to indicate that mice, gophers, or porcupines are causing any appreciable amount of damage to reproduction, pole, or mature stands. If rodents do become troublesome, control measures will be used as deemed necessary.

F. Animal Control

Browsing will be restricted on regenerated sites for the first few years of tree growth. The reproduction will be protected from browsing by domestic stock through proper stocking, distribution, or total exclusion.

Damage by wildlife is not a problem at the present. Wildlife populations will be kept within acceptable limits by directing hunters to specific overpopulated areas. All wildlife problems in conjunction with timber management activities will be correlated with the Arizona Fish and Game Commission.

G. Acquisition

There is very little actual acquisition contemplated at the present. There is, however, a certain amount of land within the working circle which is up for exchange. Table 17 in the appendix summarizes the land exchange and acquisition planned on the working circle.

H. Slash Disposal

The standards for treatment of slash should be outlined in the presale prescriptions and should be based on obtaining the most fire and soil protection for funds available while meeting the objectives of forest management and other land uses. Standards should vary with forest types, cutting, soil types, size of areas, risk, fuels, topography, values, availability of protection funds, possibility of intensive protection versus complete disposal, accessibility, and the many other factors affecting protection and land use.

End, Action Plan Section of
1962 Timber Management Plan
Payson Working Circle
Tonto National Forest

IX. FOREST INSECTS AND DISEASES

The primary disease problem is, of course, the dwarfmistletoe on ponderosa pine. The methods of cutting outlined in this plan will reduce the dwarfmistletoe infection.

Insects have not been a problem and, with the planned methods of logging and cultural improvement, no problem is anticipated. If insect infestations become excessive, the proper control measures will be taken.

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X. APPENDIX

A. References

1. U.S. Department of Agriculture, Forest Service, Station Paper No. 49, A Survey of Dwarfmistletoe in Arizona and New Mexico, by Stuart R. Andrews and John P. Daniels. Fort Collins, Colorado, Rocky Mountain Forest and Range Experiment Station. 1960.

2. _____ Miscellaneous Publication No. 12, Silvics of Ponderosa Pine, by James D. Curtis and Donald W. Lynch. Ogden, Utah, Intermountain Forest and Range Experiment Station. 1957

3. _____ Station Paper No. 14, Dwarfmistletoe of Ponderosa Pine in the Southwest, by Lake S. Gill. Fort Collins, Colorado, Rocky Mountain Forest and Range Experiment Station. 1954.

4. _____ Timber Management Plans on the National Forests, by L. S. Gross. Washington D.C., Washington Office, Division of Timber Management. 1950.

5. _____ Technical Bulletin No. 1191, The Application of Unit Area Control in the Management of Ponderosa-Jeffrey Pine at Blacks Mountain Experimental Forest, by William E. Hallin, California Forest and Range Experiment Station. Washington, D.C. 1959.

6. _____ Station Paper No. 21, Management of Douglas-Fir Timberland in the Southwest, by Herman Krauch. Fort Collins, Colorado, Rocky Mountain Forest and Range Experiment Station. 1956.

7. _____ Agriculture Monograph No. 6, Management of Ponderosa Pine in the Southwest, by G. A. Pearson, Southwest Forest and Experiment Station. Washington, D.C., Government Printing Office. 1950 - 892292.

8. _____ Region 3 Timber Management Handbook. Albuquerque, New Mexico, Forest Service, Region 3. 1950.

9. _____ Technical Bulletin No. 630, Yield of Even-Aged Stands of Ponderosa Pine, by Walter H. Meyer, Pacific Northwest Forest Experiment Station. Washington, D.C. 1938 (slightly revised 1961).

10. _____ Technical Bulletin No. 201, The Yield of Douglas Fir in the Pacific Northwest, by Richard E. McArdle, Walter H. Meyer, and Donald Bruce. Washington D.C. 1949 (slightly revised 1961).

11. _____ Forest Service Manual. Washington, D.C. 1957-1958 and amendments (Title 2400).

12. _____ Forest Service Handbook. Washington, D.C. 1957-1958 and amendments (Title 2400).

13. _____ Forest Service Handbook. Washington, D.C. 1957-1958 and amendments (Title 5100).

14. _____ Forest Service Roads Handbook. Washington, D.C. (Category 2 Handbook, Title 5610.42.)

15. _____ Region 3, Tonto National Forest Recreation Survey. Phoenix, Arizona. 1960.

16. _____ Region 3, Payson District Multiple-Use Plan. Phoenix, Arizona. 1960.

17. Hawksworth, Frank G., and Arthur A. Lusher, "Dwarfmistletoe Survey and Control on the Mescalero-Apache Reservation, New Mexico." Journal of Forestry, Vol. 54, No. 6, Part 1, p. 384-390. Washington 6, D.C., Society of American Foresters. 1956.

B. Statistics of Inventory

Number of Sample Plots	N	= 235
Sum of Plot Volumes	ΣX	= 187,810
Sum of Squared Plot Volumes	ΣX^2	= 398,911,000
Sum of Plot Volumes Squared	$(\Sigma X)^2$	= 35,272,596,100
Mean Volume per acre (gross)	$\bar{x}$	= 3196.77 Bd.Ft.
Standard deviation from mean	S_x	= 1028.97
Standard Error of mean	$S_{\bar{x}}$	= 67.12%
Coefficient of Variation	C	= 128.75%
Percent of Error	A	= 8.4%
Number of plots required for 5% accuracy (two times out of three)		= 254

C. Increment and Allowable Yield Calculations

1. Southwestern Ponderosa Pine Growth Formulae

Pine Sawtimber, Poorly Stocked, Cutover

	Per Acre	
Net Reserve volume 11.0" d.b.h. & over	3095.9	Bd. Ft. Scribner
Basal Area 11.0" d.b.h. and over	27.04	Sq. Ft.
No. of Reserve Trees 11.0" d.b.h. and over	21	Trees
No. of Reserve Trees 8.0" to 10.9" d.b.h. inc.	27	Trees
Growth on trees 11" d.b.h. and over	92.4	Bd. Ft. Scribner
Ingrowth on trees 8.0" to 10.9" d.b.h. inc.	33.8	Bd. Ft. Scribner
	126.2	Bd. Ft. Scribner
Less Mortality	-5.8	Bd. Ft. Scribner
Gross Total	120.4	Bd. Ft. Scribner
Less 25% for defect, etc.	-30.1	Bd. Ft. Scribner
Net annual growth per acre	90.3	Bd. Ft. Scribner

2. Calculation of Probable Increment for Working Circle Using Site Indices

Table 14.

Potential Mean Annual Growth
Payson Working Circle
Tonto National Forest

Net Board Feet - Scribner

Working Group	Rotation Age	Ponderosa Pine Mean Annual Growth			Mixed-Conifer Mean Annual Growth			By Working Circle Mean Annual Growth		
		Acres	Per Acre	Total	Acres	Per Acre	Total	Acres	Per Acre	Total
Technical	110	83,197	113 1/	9,401,261	1,235	111 1/	137,085	84,432	113 1/	9,538,346
Webber Creek	150	3,162	134	423,708	234	142	33,228	3,396	135	456,936
Administrative	190	11,508	150	1,726,200	708	146	103,368	12,216	150	1,829,568
By Working Circle		97,867	118	11,551,169	2,177	126	273,681	100,044	118	11,824,850
		Net Cubic Feet								
Technical	110	83,197	40 1/	3,327,880	1,235	51 1/	62,985	84,432	40 1/	3,390,865
Webber Creek	150	3,162	34	107,508	234	43	10,062	3,396	35	117,570
Administrative	190	11,508	31	356,748	708	42	29,736	12,216	32	386,484
By Working Circle		97,867	39	3,792,136	2,177	47	102,783	100,044	39	3,894,919

1/ Weighted Averages

TABLE 15.

Calculation of Periodic Annual Growth
Payson Working Circle
Tonto National Forest

Symbol	Timber Stand Classification	Stocking Class in % of Crown Cover	1/ Acres 110-Yr. Rotation Age	1/ Acres 150-Yr. Rotation Age	1/ Acres 190-Yr. Rotation Age	2/ Basal Area At Full Stocking Sq. Ft.	57% of Full Stocking Basal Area Sq. Ft.	3/ Actual Basal Area Sq. Ft.	4/ Percent of Actual to 57% Basal Area	5/ Per Acre Periodic Annual Growth as Derived From Mean Annual Growth 110-Yr. Age	150-Yr. Age	190-Yr. Age	5/ Working Circle Periodic Annual Growth 110-Yr. Age	150-Yr. Age	190-Yr. Age	6/ Per Acre Periodic Annual Growth as Derived from Mean Annual Growth 110-Yr. Age	150-Yr. Age	190-Yr. Age	6/ Working Circle Periodic Annual Growth 110-Yr. Age	150-Yr. Age	190-Yr. Age
										Net Bd. Ft. Scribner			Net Bd. Ft. Scribner			Net Cubic Feet			Net Cubic Feet		
	Ponderosa Pine									120 Mean	147 Mean	150 Mean				41 Mean	35 Mean	31 Mean			
P6	Nonstocked		2,105	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
P8PC	Cutover Poles	Poor	3,457	--	--	177	101	19.67	19.5	23	--	--	79,511	--	--	8	--	--	27,656	--	--
P8MC	Cutover Poles	Medium	1,743	--	--	177	101	75.36	74.6	90	--	--	156,870	--	--	31	--	--	54,033	--	--
P9PC	Cutover Sawtimber	Poor	21,305	--	--	177	101	49.66	49.2	59	--	--	1,256,995	--	--	20	--	--	426,100	--	--
P9MC	Cutover Sawtimber	Medium	4,170	1,103	11,508	177	101	74.18	73.4	88	108	110	366,960	119,124	1,265,880	30	26	23	125,100	27,678	264,684
P8PV	Virgin Poles	Poor	7,264	258	--	177	101	30.84	30.5	37	45	--	268,768	11,610	--	13	11	--	94,432	2,838	--
P8MV	Virgin Poles	Medium	2,591	19	--	177	101	69.67	69.0	83	101	--	215,053	1,919	--	28	24	--	72,548	456	--
P9PV	Virgin Sawtimber	Poor	33,180	1,408	--	177	101	59.06	58.5	70	86	--	2,322,600	121,088	--	24	20	--	796,320	28,160	--
P9MV	Virgin Sawtimber	Medium	2,565	--	--	177	101	64.40	63.8	77	--	--	197,505	--	--	26	--	--	66,690	--	--
										7 Mean	35 Mean					28 Mean	25 Mean			
PNO	Fringe Sawtimber		4,817	374	--	141	80	7.44	9.3	1	3	--	4,817	1,122	--	3	2	--	14,451	748	--
			83,197	3,162	11,508					59	81	110	4,869,079	254,863	1,265,880	20	19	23	1,677,330	60,880	264,684
				97,867						Weighted Average - 65				6,398,822		Weighted Average - 20				2,002,894	
	Mixed Conifer									111 Mean	142 Mean	156 Mean				51 Mean	43 Mean	42 Mean			
MC9V	Virgin Sawtimber	All	1,235	234	708	197	112	102.60	9.16	102	130	134	125,970	30,420	94,872	47	39	38	58,045	9,126	26,904
			1,235	234	708					102	130	134	125,970	30,420	94,872	47	39	38	58,045	9,126	26,904
				2,177						Weighted Average - 115				251,262		Weighted Average - 43				94,075	
			84,432	3,396	12,216					59	84	111	4,995,049	285,283	1,360,752	21	21	24	1,735,375	70,006	291,588
				100,044						Weighted Average - 66				6,641,084		Weighted Average - 21				2,096,969	

1/ 110-year rotation age, 120-year rotation period for Technical Working Group. 150-year rotation age, 160-year rotation period for Webber Creek Working Group. 190-year rotation age, 200-year rotation period for Administrative Working Group.

2/ From Table 4, T.B. 630, for Ponderosa Pine, average site index 65 for poles and sawtimber, 40 for fringe sawtimber. Average age poles, 60 years; sawtimber, 105 years. From Table 2, T.B. 201, for mixed-conifer, average site index 80. Average age - 105 years.

3/ From stand tables compiled from inventory data.

4/ Actual basal area stocking divided by 57% of Full Basal Area Stocking.

5/ Mean annual growth Scribner bd. ft. for ponderosa pine from Table 25, T.B. 630, Average site index 65 for poles and sawtimber, 40 for fringe sawtimber. Mean annual growth Scribner bd. ft. for mixed-conifer computed from Table 4, T.B. 201, Average site index 80.

6/ Mean annual growth cu. ft. for ponderosa pine from Table 21, T.B. 630, average site index 65 for poles and sawtimber, 40 for fringe sawtimber. Anticipated periodic annual growth per acre determined by multiplying the actual percent of basal area stocking by the mean annual growth.

TABLE 16

Timber Type Legend for Table 15.

Symbol	Meaning of Symbol
Symbol	
P	Ponderosa Pine
MC	Mixed-Conifer
NO	Nontimbered
NC	Brush
NPJ	Woodland
A	Aspen
Size Class	
6	Nonstocked
8	Poles
9	Sawtimber
Stocking (Crown Density)	
P	Poorly stocked (10% to 39% crown density)
M	Moderately stocked (40% to 69% crown density)
Condition	
V	Virgin
C	Cutover
X	Inoperable
R	Reserved

Thus: Symbol P9PV means ponderosa pine sawtimber, poorly stocked, virgin.
Symbol MC6 means nonstocked mixed-conifer site.
Symbol MC8WC means well-stocked, cutover, mixed-conifer pole stand.
Symbol A8MX means an inoperable aspen, medium-stocked pole stand.

d. Adjustment of Periodic Annual Growth.

In the opinion of Tonto Forest Officer, this working circle has a loss of 50% of board feet volumes and 30% of cubic feet volumes from excessive uncaptured mortality. These amounts should be deducted from the growth figure shown for all the virgin stands. This affects the calculated periodic annual growth as follows:

	For Payson Working Circle	
	Bd. Ft. Scribner	Cu. Ft.
Calculated Periodic Annual Growth	6,641,084	2,096,969
Deduct 50% bd. ft. loss of growth in virgin stands	1,697,872	
Deduct 30% loss of cu. ft. growth in virgin stands		351,215
Probable net growth for working circle	4,943,212	1,745,754
Annual Allowable Cut - Sawtimber	4,350,000	847,953
	593,212	897,801
Deduct Annual Allowable Cut - Pulpwood	573,750 1/	751,230
Net annual growth which will be retained to bring understocked stands to optimum stocking	19,462	146,571

1/ Analysis of stand tables showed that approximately 30% of the annual allowable pulpwood cut will come from sawtimber-size material; i.e., stems 11" through 18" d.b.h.

3. Calculation of Allowable Cut

Trees were classified as to "cut" or "leave" when the field inventory was made. These cut figures are used to determine the allowable cut for this cutting period. The periodic annual growth is used as a check on the allowable cut.

a. Sawtimber Cut

Item	Bd. Ft. Scribner Working Circle	Bd. Ft. Scribner Allowable Cut	Cu. Ft. Allowable Cut
Total net volume for Working Circle, Stems 11" & over d.b.h.	248,017,653		
Net volume all virgin, nonstocked and fringe stands	132,763,428		
Average cut for all virgin type shown in inventory	51%	67,709,348	
Net volume all cutover and administrative area stands	115,254,205		
Average cut for all cut-over stands shown in inventory	30% 34,576,267		
45% of total cut will go to pulpwood	55%	19,016,946	
20-year cut		86,726,294	
Annual allowable cut		4,336,315	
Rounded to		4,350,000	847,953
Residual stand discounting growth	149,542,653		
Minus 11,475,000 cut for pulpwood			
Growth, 20 years at 4,943,212	98,864,240		
Total Residual Stand in 20 years	248,406,893		

b. Cubic-Foot Cut

Pine, virgin sawtimber	4,079.6 Bd.Ft. per acre
Stems 11.0" and over d.b.h.	795 Cu.Ft. per acre
Converting Factor	5.13 Bd.Ft. per each Cu.Ft.

Item	Cubic Feet	
	Working Circle	Allowable Cut
Net volume all stands 5.0" d.b.h. and over	54,000,931	
Sawtimber cut - 20 years @ 847,953		16,959,060
Pulpwood cut - 8,838 cords per year under contract at 85 cu.ft. per cord is 751,230 cu.ft. for 20 years		15,024,600
Total allowable cut 20 years		31,983,660
Total allowable cut - annually		1,599,183
Residual stand discounting growth	22,017,271	
Growth, 20 years at 1,745,754	34,915,080	
Total Residual stand in 20 years	56,932,351	

c. Calculation of Area Control

Total operable acres in working circle	100,044
20-year cutting period	20
Average No. of acres to enter each year	5,002

Regeneration Area Calculation

Item	Working Group		
	Technical	Webber Creek	Administrative
Acres in each working group	84,432	3,396	12,216
Number of cutting periods	6	8	10
Acres needed each cutting period	14,072	425	1,222
	425		
	1,222		
Total acres needed each cutting period	15,719		
Acres of nonstocked to be planted	2,105		
	13,614		
20-year cutting period	20		
Acres to receive reproduction cuts annually	681		

d. Calculation of Volume to Cut from Regeneration Cut Acreage

Average gross volume per acre all virgin stands	3,551	Bd.Ft.
Average defect per acre all virgin stands - 26%	.74	
Average net volume per acre all virgin stands	2,628	Bd.Ft.
Reserve average of 30% of volume for seed trees	.70	
Average net cut per acre from regeneration cut acreage	1,839	Bd. Ft.
Acres to cut annually	681	
	1,252,359	rounded
Average net volume to cut from regeneration cut acreage	1,250,000	Bd.Ft. Scribner

e. Volume to Cut from Intermediate Cut Acreage

Working circle annual allowable cut	4,350,000	Bd.Ft. Scribner
Volume to cut from regeneration cut acreage	1,250,000	Bd.Ft. Scribner
Volume to cut from intermediate cut acreage	3,100,000	Bd.Ft. Scribner

f. Intermediate Cut Acreage

Total acres cut annually	5,002
Regeneration cut acres annually	681
Intermediate cut acres annually	4,321

TABLE 17.

PLANNED LAND EXCHANGES FOR THE PAYSON WORKING CIRCLE

Location	Acres Exchange	Acres Acquisition	Acres* Timber Type
T.11N, R.9E., Secs. 2 & 3		160	NPJ - 160 acres
T.12N, R.9E. Sec. 25		160	Not within WC
T.12N, R.8E. Sec. 20	160		NC - 160 acres
T.12N, R.8E. Sec. 21	200		P9PC - 160 acres P8MC - 40 acres
T.12N, R.8E. Sec. 22	40		P9PC - 40 acres
T.12N, R.8E Sec. 24	120		P9PU - 80 acres NPJ - 20
T.12N, R.8E Sec. 25	320		NC - 240 P9PU - 40 P8P - 40
T.12N, R.8E. Sec. 26	320		NC - 60 P9PU - 100 P8PC - 80 NO - 80
T.12N., R.8E. Sec. 27	160		P9PU - 160
T.12N., R.8E. Sec. 28	40		P9PC - 40
T.12N., R.8E. Sec. 29	40		P9PC - 40
T.12N., R.8E. Sec. 35	240		NC - 20 P9PU - 180 NO - 40
T.12N., R.8E Sec. 36	40		P9PU - 40

*Follows same legend as for Table 4.

Location	Acres Exchange	Acres Acquisition	Acres* Timber Type
T.11N., R10E. Sec. 31	220		Unconsidered in Working Circle Volumes or Acres
T.11N., R.10E Sec. 32	480		"
T.11N., R.10E. Sec. 33	620		"
T.11N., R.10E. Sec. 34	520		"
T.11N., R.10E. Sec. 35	640		"
T.11N., R.11E. Sec. 31	140		"
T.10N., R.10E. Sec. 2	640		"
T.10N., R.10E. Sec. 3	360		"
T.10N., R.10E. Sec. 4	280		"
T.10N., R.10E. Sec. 5	320		"
T.10N., R.10E. Sec. 6	280		"
T.10N., R.10E. Sec. 7	160		"
T.10N., R.10E. Sec. 8	160		"
T.10N., R.10E. Sec. 9	200		"

*Follows same legend as for Table 4.

Location	Acres Exchange	Acres Acquisition	Acres * Timber Type
T.10N., R.10E. Sec. 10	240		Unconsidered in Working Circle Volumes or Acres
T.10N., R.10E. Sec. 11	480		"

*Follows same legend as for Table 4

This land which is in question is primarily within the too-scattered-to-log classification. There are only 560 acres which contain commercial timber and this will all be cut over before exchange takes place. The acquisition and exchange program now planned will not affect the timber management of the working circle except in a very minor way.

TABLE 18

Gross Volume Per Acre by Species and Forest Type

Forest Type	No. of Acres	Bd. Ft. Per Acre - Scribner						No. of Plots
		Ponderosa Pine			DF	WF	Total	
		YP	BJ	Subtotal				
P9PV	34,588	2,274.9	1,515.7	3,790.6	242.3	46.7	4,079.6	102
P9MV	2,565	950.0	1,350.0	2,300.0	480.0	--	2,780.0	4
P8PV	7,522	438.6	328.6	767.2	5.7	--	772.9	28
P8MV	2,610	65.0	1,640.0	1,705.0	65.0	--	1,770.0	8
MC9PV	1,185	3,230.5	162.5	3,393.0	1,612.0	4,004.0	9,009.0	4
MC9MV	209	3,230.5	162.5	3,393.0	1,612.0	4,004.0	9,009.0	--
MC8MV	59	3,230.5	162.5	3,393.0	1,612.0	4,004.0	9,009.0	--
P9PC	21,305	1,789.7	1,210.3	3,000.0	87.6	8.3	3,095.9	58
P9MC	4,170	1,126.7	1,910.0	3,036.7	480.0	--	3,516.7	12
P8PC	3,457	88.0	226.7	314.7	--	--	314.7	15
P8MC	1,743	--	1,570.0	1,570.0	--	--	1,570.0	4
P6	2,105	394.3	188.6	582.9	--	--	582.9	14
PNO	5,191	394.3	188.6	582.9	--	--	582.9	--
PR	12,611	2,919.0	1,457.0	4,376.0	436.0	188.0	5,000.0	4
MCR	724	2,919.0	1,457.0	4,376.0	436.0	188.0	5,000.0	--
P9PX	8,029	1,365.0	909.4	2,274.4	145.4	28.0	2,447.8	--
P9MX	305	570.0	810.0	1,380.0	288.0	--	1,668.0	--
P8PX	438	263.2	197.1	460.3	3.4	--	463.7	--
P8MX	264	39.0	984.0	1,023.0	39.0	--	1,062.0	--
MC9PX	2,121	1,080.0	60.0	1,140.0	540.0	1,320.0	3,000.0	--
MC9MX	476	1,080.0	60.0	1,140.0	540.0	1,320.0	3,000.0	--
MC8PX	32	1,080.0	60.0	1,140.0	540.0	1,320.0	3,000.0	--
MC8MX	34	1,080.0	60.0	1,140.0	540.0	1,320.0	3,000.0	--
	111,743							
NOX	2,241							
NC	17,075							
NPJ	43,785							
NF	1,244							
NR	7,423							
NCX	6,511							
NFX	56							
NPJX	1,369							
	79,704							
	191,447							

Table 19

Net Volume Per Acre by Species, Forest Type, and Condition Class

Forest Type	No. of Acres	Bd. Ft. Per Acre - Scribner					
		Ponderosa Pine					
		YP	BJ	Sub-Total	DF	WF	Total
P9PV	34,588	1,546.9	1,288.3	2,835.2	181.7	23.3	3,040.2
P9MV	2,565	646.0	1,147.5	1,793.5	360.0	--	2,153.5
P8PV	7,522	298.2	279.3	577.5	4.3	--	581.8
P8MV	2,610	44.2	1,394.0	1,438.2	48.7	--	1,486.9
MC9PV	1,185	2,196.8	138.1	2,334.9	1,209.0	2,002.0	5,545.9
MC9MV	209	2,196.8	138.1	2,334.9	1,209.0	2,002.0	5,545.9
MC8MV	59	2,196.8	138.1	2,334.9	1,209.0	2,002.0	5,545.9
P9PC	21,305	1,342.3	1,089.3	2,431.6	74.4	5.4	2,511.4
P9MC	4,170	845.0	1,719.0	2,564.0	408.0	--	2,972.0
P8PC	3,457	66.0	204.0	270.0	--	--	270.0
P8MC	1,743	--	1,413.0	1,413.0	--	--	1,413.0
P6	2,105	268.1	160.3	428.4	--	--	428.4
PRC	12,611	1,984.9	1,238.5	3,223.4	327.0	94.0	3,644.4
MCR	724	1,984.9	1,238.5	3,223.4	327.0	94.0	3,644.4
P9PX	8,029	928.2	773.0	1,701.2	109.0	14.0	1,824.2
P9MX	305	387.6	688.5	1,076.1	216.0	--	1,292.1
P8PX	438	179.0	167.5	346.5	2.6	--	349.1
P8MX	264	26.5	836.4	862.9	29.3	--	892.2
MC9PX	2,121	734.4	51.0	785.4	405.0	660.0	1,850.4
MC9MX	476	734.4	51.0	785.4	405.0	660.0	1,850.4
MC8PX	32	734.4	51.0	785.4	405.0	660.0	1,850.4
MC8MX	34	734.4	51.0	785.4	405.0	660.0	1,850.4
PNO	5,191	268.1	160.3	428.4	--	--	428.4
Total	111,743						

Table 20

Net Volume by Forest Type, by Condition Class, and by Working Group

Condition Class	Ponderosa Pine		Mixed-Conifer		Totals	
	Acres	Board Feet Scribner	Acres	Board Feet Scribner	Acres	Board Feet Scribner
Technical Working Group						
Nonstocked	2,105	901,853	--	--	2,105	901,853
Cutover Poletimber	5,200	3,396,353	--	--	5,200	3,396,353
Virgin Poletimber	9,855	8,078,753	59	327,208	9,914	8,405,961
Cutover Sawtimber	25,475	65,898,722	--	--	25,475	65,898,722
Virgin Sawtimber	35,745	106,397,563	1,176	6,521,979	36,921	112,919,542
Fringe Sawtimber	4,817	2,063,603	--	--	4,817	2,063,603
Subtotal Operable	83,197	186,736,847	1,235	6,849,187	84,432	193,586,034
Inoperable Poletimber	702	388,423	66	122,126	768	510,549
Inoperable Sawtimber	8,334	15,040,914	2,597	4,805,489	10,931	19,846,403
Subtotal Inoperable	9,036	15,429,337	2,663	4,927,615	11,699	20,356,952
Total Technical Working Group	92,283	202,166,184	3,898	11,776,802	96,131	213,942,986
Webber Creek Working Group						
Virgin Poletimber	277	178,734	--	--	277	178,734
Cutover Sawtimber	1,103	4,019,395	--	--	1,103	4,019,395
Virgin Sawtimber	1,408	4,285,859	234	1,267,244	1,642	5,553,103
Fringe Sawtimber	374	160,397	--	--	374	160,397
Subtotal Operable	3,162	8,644,385	234	1,267,244	3,396	9,911,629
Administrative Working Group						
Cutover Sawtimber	11,508	41,939,755	--	--	11,508	41,939,755
Virgin Sawtimber	--	--	708	2,580,235	708	2,580,235
Subtotal Operable	11,508	41,939,755	708	2,580,235	12,216	44,519,990
Working Circle Totals						
Nonstocked	2,105	901,853	--	--	2,105	901,853
Cutover Poletimber	5,200	3,396,353	--	--	5,200	3,396,353
Virgin Poletimber	10,132	8,257,487	59	327,208	10,191	8,584,695
Cutover Sawtimber	38,086	111,857,872	--	--	38,086	111,857,872
Virgin Sawtimber	37,153	110,683,422	2,118	10,369,458	39,271	121,052,880
Fringe Sawtimber	5,191	2,224,000	--	--	5,191	2,224,000
Subtotal Operable	97,867	237,320,987	2,177	10,696,666	100,044	248,017,653
Inoperable Poletimber	702	388,423	66	122,126	768	510,549
Inoperable Sawtimber	8,334	15,040,914	2,597	4,805,489	10,931	19,846,403
Subtotal Inoperable	9,036	15,429,337	2,663	4,927,615	11,699	20,356,952
Total Working Circle	106,903	252,750,324	4,840	15,624,281	111,743	268,374,605

Table 21

Net Volume by Forest Type, by Species, by Working Group, and by Condition Class

Forest Type	No. of Acres	Board Feet - Scribner					
		Ponderosa Pine					
		YP	BJ	Subtotal	DF	WF	Total
Technical Working Group							
Ponderosa Pine							
Nonstocked	2,105	564,401	337,452	901,853	--	--	901,853
Cutover Poletimber	5,200	228,162	3,168,191	3,396,353	--	--	3,396,353
Cutover Sawtimber	25,475	32,120,923	30,375,128	62,496,051	3,287,730	114,941	65,898,722
Virgin Poletimber	9,855	2,280,647	5,640,689	7,921,336	157,417	--	8,078,753
Virgin Sawtimber	35,745	52,983,132	45,689,131	98,672,263	6,952,206	773,094	106,397,563
Fringe Sawtimber	4,817	1,291,438	772,165	2,063,603	--	--	2,063,603
Subtotal	83,197	89,468,703	85,982,756	175,451,459	10,397,353	888,035	186,736,847
Inoperable Poletimber	702	85,393	294,191	379,584	8,839	--	388,423
Inoperable Sawtimber	8,334	7,570,736	6,416,329	13,987,065	941,443	112,406	15,040,914
Subtotal	9,036	7,656,129	6,710,520	14,366,649	950,282	112,406	15,429,337
Total Pine	92,233	97,124,832	92,693,276	189,818,108	11,347,635	1,000,441	202,166,184
Mixed-Conifer							
Virgin Poletimber	59	129,611	8,148	137,759	71,331	118,118	327,208
Virgin Sawtimber	1,176	2,583,437	162,406	2,745,843	1,421,784	2,354,352	6,521,979
Subtotal	1,235	2,713,048	170,554	2,883,602	1,493,115	2,472,470	6,849,187
Inoperable Poletimber	66	48,470	3,366	51,836	26,730	43,560	122,126
Inoperable Sawtimber	2,597	1,907,237	132,447	2,039,684	1,051,785	1,714,020	4,805,489
Subtotal	2,663	1,955,707	135,813	2,091,520	1,078,515	1,757,580	4,927,615
Total Mixed-Conifer	3,898	4,668,755	306,367	4,975,122	2,571,630	4,230,050	11,776,802
Total Technical Working Group	96,131	101,793,587	92,999,643	194,793,230	13,919,265	5,230,491	213,942,986
Webber Creek Working Group							
Ponderosa Pine							
Cutover Sawtimber	1,103	2,189,597	1,365,435	3,555,032	360,681	103,682	4,019,395
Virgin Poletimber	277	78,136	98,621	176,757	1,977	--	178,734
Virgin Sawtimber	1,408	2,179,142	1,815,483	3,994,625	256,698	34,536	4,285,859
Fringe Sawtimber	374	100,393	60,004	160,397	--	--	160,397
Total Pine	3,162	4,547,268	3,339,543	7,886,811	619,356	138,218	8,644,385
Mixed-Conifer							
Virgin Sawtimber	234	510,588	49,922	560,510	268,794	437,940	1,267,244
Total Mixed-Conifer	234	510,588	49,922	560,510	268,794	437,940	1,267,244
Total Webber Creek Working Group	3,396	5,057,856	3,389,465	8,447,321	888,150	576,158	9,911,629
Administrative Working Group							
Ponderosa Pine							
Cutover Sawtimber	11,508	22,842,229	14,252,658	37,094,887	3,763,116	1,081,752	41,939,755
Total Pine	11,508	22,842,229	14,252,658	37,094,887	3,763,116	1,081,752	41,939,755
Mixed-Conifer							
Virgin Sawtimber	708	1,405,309	876,858	2,282,167	231,516	66,552	2,580,235
Total Mixed-Conifer	708	1,405,309	876,858	2,282,167	231,516	66,552	2,580,235
Total Adm. Working Group	12,216	24,247,538	15,129,516	39,377,054	3,994,632	1,148,304	44,519,990
Working Circle Totals							
Ponderosa Pine							
Nonstocked	2,105	564,401	337,452	901,853	--	--	901,853
Cutover Poletimber	5,200	228,162	3,168,191	3,396,353	--	--	3,396,353
Cutover Sawtimber	38,086	57,152,749	45,993,221	103,145,970	7,411,527	1,300,375	111,857,872
Virgin Poletimber	10,132	2,358,783	5,739,310	8,098,093	159,394	--	8,257,487
Virgin Sawtimber	37,153	55,162,274	47,504,614	102,666,888	7,208,904	807,630	110,683,422
Fringe Sawtimber	5,191	1,391,831	832,169	2,224,000	--	--	2,224,000
Total Pine	97,867	116,858,200	103,574,957	220,433,157	14,779,825	2,108,005	237,320,987
Mixed-Conifer							
Virgin Poletimber	59	129,611	8,148	137,759	71,331	118,118	327,208
Virgin Sawtimber	2,118	4,499,334	1,089,186	5,588,520	1,922,094	2,858,844	10,369,458
Total Mixed-Conifer	2,177	4,628,945	1,097,334	5,726,279	1,993,425	2,976,962	10,696,666
Total Operable	100,044	121,487,145	104,672,291	226,159,436	16,773,250	5,084,967	248,017,653
Ponderosa Pine							
Inoperable Poletimber	702	85,393	294,191	379,584	8,839	--	388,423
Inoperable Sawtimber	8,334	7,570,736	6,416,329	13,987,065	941,443	112,406	15,040,914
Total Pine	9,036	7,656,129	6,710,520	14,366,649	950,282	112,406	15,429,337
Mixed-Conifer							
Inoperable Poletimber	66	48,470	3,366	51,836	26,730	43,560	122,126
Inoperable Sawtimber	2,597	1,907,237	132,447	2,039,684	1,051,785	1,714,020	4,805,489
Total Mixed-Conifer	2,663	1,955,707	135,813	2,091,520	1,078,515	1,757,580	4,927,615
Total Inoperable	11,699	9,611,836	6,846,333	16,458,169	2,028,797	1,869,986	20,356,952
Total Working Circle	111,743	131,098,981	111,518,624	242,617,605	18,802,047	6,954,953	268,374,605

Table 22

Defect Factors Used to Derive Net Volumes

Species	Virgin		Cutover	
	Defect %	Defect Factor	Defect %	Defect Factor
Yellow Pine	32	68	25	75
Black Jack	15	85	10	90
Douglas-Fir	25	75	15	85
White Fir	50	50	35	65

F. Maps - In attached binder.

1. Timber Sale, Transportation System, and Planting Area Map.
2. Pulpwood Cutting Area and Thinning Area Map.
3. Compartment Map.
4. Working Group Map.